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CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

1   1. A computer system for ranking one or more objects having two or more attributes

2   comprising:

3   one or more central processing units (CPUs) and one or more memories and one

4   or more network interface to one or more networks associated with the CPUs;

5   one or more visual interfaces which receives one or more objects having two or

6   more attributes, and visually presents the one or more objects;

7   one or more weight generator modules which receives the one or more objects

8   having two or more attributes and one or more objects ranked by one or more users, and

9   computes one or more weights of one or more attributes of the objects; and

10   one or more multi-criteria decision analysis module which receives the one or

11   more objects having two or more attributes and one or more weights of one or more

12   attributes of objects, and computes one or more scores of the one or more objects.

1   2. The system of claim 1, wherein at least one of the one or more objects having two or

2   more attributes include a sell bid used in online trading based on one or more Request-

3   For-Quote (RFQ) processes in marketplaces.

1   3. The system of claim 2, wherein the one or more attribute is a pair of name and value,

2   and is grouped into categories including product specification, service specification and

3   supplier qualification.

1   4. The system of claim 3, wherein the product specification includes attributes such as

2   price, material quality and properties, color and size.

1   5. The system of claim 3, wherein the service specification includes delivery time and

2   cost, and warranty.

1   6. The system of claim 3, wherein the supplier qualification includes trading history,

2   experience and reputation.

1   7. The system of claim 1, wherein the visual interface presents a view of the one or more

2   objects having two or more attributes in one or more parallel coordinates.

1   8. The system of claim 7, wherein the parallel coordinates presents an attribute of an

2   object by a parallel axis labeled by attribute name, and the object having two or more

3   attributes by a collection of line segments connecting attribute value points located on the

4   parallel axes representing attributes.

1   9. The system of claim 1, wherein the visual interface allows one or more user to

2   manually specify the ranks of the one or more objects having two or more attributes

3   displayed in the visual interface.

1   10. The system of claim 1, wherein the visual interface presents a view of the one or more

2   objects having two or more attributes along with the one or more scores of individual

3   objects of the one or more objects.

1   11. The system of claim 1, wherein the visual interface presents a view of one or more

2   objects having two or more attributes along with one or more scores of individual objects

3   of the one or more objects and one or more weights of one or more attributes of objects.

1   12. The system of claim 1, wherein the score of the object having two or more attributes

2   is a linear combination of one or more weighted attribute values of the object.

1   13. The system of claim 1, wherein the weight generator process computes one or more

2   weights of one or more attributes of the object by using a score inequality specified by

3   two or more ranks of one or more objects given by one or more users.

1   14. The system of claim 1, wherein:

2   the score inequality is provided by:

3 $$\sum_j w_j \, f(a_{Aj}) > \sum_j w_j \, f(a_{Bj}) > \sum_j w_j \, f(a_{Cj}); \text{ and}$$

4   a scoring function for calculating the scores is a linear combination of the

5   weighted values of the attributes provided by:

6 $$S_i = \sum_j w_j f(a_{ij}), \text{ for all } i,$$

7   wherein the number of scores can be any number larger than 1 and

8   wherein S_i denotes a score of object i, w_j a weight of the attribute j, a_j a value of

9   attribute j of object i, and $f()$ a transformation of attribute value a_j.

1   15. A method of ranking one or more objects having two or more attributes comprising

2   the steps of:

3   receiving one or more objects having two or more attributes;

4   specifying a number and members of the selected objects;

5   displaying one or more views of the selected objects in one or more visual

6   interfaces;

7   providing one or more ranks of the selected objects displayed in the one or more

8   visual interfaces;

9   computing one or more weights of one or more attributes of the objects by using

10   one or more ranks specified for the selected objects;

11   computing one or more scores of one or more objects having two or more

12   attributes by using the computed weights of one or more attributes of objects;

13   displaying one or more views of the one or more objects having two or more

14   attributes with one or more scores for individual objects in the one or more visual

15   interfaces; and

16   displaying one or more weights of the one or more attributes of the objects in the

17   one or more visual interfaces.

1   16. The method of claim 15, further comprising the step of examining the one or more

2   scores of one or more objects having two or more attributes for decision-making in

3   selecting one or more objects having one or more high scores.

1   17. The method of claim 15, further comprising the step of examining the one or more

2   weights of one or more attributes of objects for inspecting the accuracy of one or more

3   weights of one or more attributes computed by one or more weight generator processes.

1   18. The method of claim 15, further comprising the step of changing a size and members

2   of the selected objects having two or more attributes, and also changing one or more

3   ranks of the selected objects.

1   19. The method of claim 15, further comprising repeating the steps of claim 15.

1   20. A machine readable medium containing code for ranking one or more objects having

2   two or more attributes, the code implementing the steps of:

3   receiving one or more objects having two or more attributes;

4   specifying a number and members of the selected objects;

5   displaying one or more views of the selected objects in one or more visual

6   interfaces;

7   providing one or more ranks of the selected objects displayed in the one or more

8   visual interfaces;

9   computing one or more weights of one or more attributes of the objects by using

10   one or more ranks specified for the selected objects;

11   computing one or more scores of one or more objects having two or more

12   attributes by using the computed weights of one or more attributes of objects;

13   displaying one or more views of the one or more objects having two or more

14   attributes with one or more scores for individual objects in the one or more visual

15   interfaces; and

16   displaying one or more weights of the one or more attributes of the objects in the

17   one or more visual interfaces.